

DOCUMENT RESUME

ED 157 923

TM 007 275

AUTHOR Owen, Steven V.
TITLE Classroom Seating Patterns and Student Ratings.
PUB DATE 28 Mar 78
NOTE 14p.; Paper presented at the Annual Meeting of the National Council on Measurement in Education (Toronto, Ontario, Canada, March 28, 1978); Appendix is marginally legible

EDRS PRICE MF-\$0.83 HC-\$1.67 Plus Postage.
DESCRIPTORS *Classroom Arrangement; Classroom Environment; College Teachers; Higher Education; *Predictor Variables; *Proximity; *Rating Scales; *Student Evaluation of Teacher Performance; Teacher Characteristics; Undergraduate Students

IDENTIFIERS *Seating Preferences; University of Connecticut Survey Courses Teaching

ABSTRACT

To determine whether instructor effectiveness depends, in part, on where students sit in the classroom, student ratings of teachers on a comprehensive university-wide teacher evaluation form were analyzed. The form, The University of Connecticut Survey of Courses and Teaching, consisted of 5 demographic variables, an 11-item rating scale, and a 70-item diagnostic check list. Seat numbers were aggregated into entire rows, from front to back, and into 6 chunks representing aisled partitions of the class, so that seating position could be related to the other demographic and rating variables on the Survey. Univariate and multivariate analyses showed small but significant relationships between seating patterns and ratings. In a replication of the study with the same instructor the following semester, few of the original outcomes were found. In conclusion, seating patterns have a slight influence on perceived instructor effectiveness, but the influence is peculiar to individual classes and not generalizable across classes. The University of Connecticut Survey is appended. (Author/CP)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Steven V. Owen

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC) AND
USERS OF THE ERIC SYSTEM."

Classroom Seating Patterns and Student Ratings

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

Steven V. Owen
University of Connecticut

ED157923

A symposium presentation at the National Council on Measurement
in Education, annual meeting, Toronto, March 28, 1978.

...printed in the United States of America...

TM007 275

Introduction

Classroom seating patterns continue to be an underexplored topic of student behavior. Little evidence exists about why students prefer certain locations in a classroom, and about whether that preference influences other student behavior (e.g., attention, achievement, ratings of teacher behavior). Adams and Biddle (1970) examined interaction patterns in grades one, six, and eleven, and discovered an "action zone" common to most of the classes. Within the action zone, pupils are more likely participants and recipients of teacher attention. One might speculate that teachers may be somewhat more "effective" with students in the action zone, and less "effective" with students outside the zone.

Gur, Gur, and Marshalek (1975) found that college students' seating preferences were apparently related to cerebral dominance (left or right hemisphere) and to handedness. They also noted that students would occasionally change seating preferences from left to right, or vice versa, depending on the "hardness" of the subject matter (i.e., physics versus art).

Beyond these studies, there is little but conjecture about seating patterns and their influence. It is possible, for example, that college students in various parts of the classroom show differences in their achievement, and judge the teacher's effectiveness in different ways. The two studies described here were designed to begin answering these questions.

Procedures and Results: Study 1

One hundred fifty seven students enrolled in an undergraduate educational psychology class filled out a comprehensive teacher evaluation form described elsewhere (Lolli, 1977; see Appendix A). The ratings were completed during the last week of class and prior to the awarding of grades. They also listed the number of the seat they occupied that day, so that seating position could be related to other demographic and rating variables. Seat numbers were

aggregated into entire rows, from front to back, and into six "chunks" representing aisled partitions of the class. The chunking arrangement is depicted in Figure 1.

A Type I repeated measures ANOVA was performed on the data. Eleven ratings items comprised the within group (repeated measures) dimension; the six classroom "chunks" formed the levels of the between group dimension. The source table (see Table 1) shows that there were significant differences among the six "chunks" on the average rating. To pinpoint the source of the variation, a Tukey HSD post hoc test was applied (Winer, 1971). However, because the Tukey test is conservative, the derived critical value was too large to locate pairwise differences within the six chunks. It will suffice to say that there is statistically significant but minor variation among the six groups on their average ratings. Figure 2 shows the cell means for the six groups.

It is noteworthy that the interaction term was nonsignificant. In short, this means that the six groups did not show different "profiles" in the 11 rating items. The significant repeated measures main effect merely indicated that there were differences across the means of the 11 evaluative items.

In a corroborative analysis, a stepwise discriminant function analysis was performed. The 11 rating items, plus five demographic variables (seen on the rating form in Appendix A: semester standing, major area, expected grade, GPA, and attendance estimate) were used to classify students into the six groupings. In this analysis, a single significant discriminant function emerged ($p < .003$). The strongest discriminator variables, in order, were rating items 7, 11 (refer to Appendix A), student major area, and rating item 4.

The five best discriminator variables correctly classified 40.38% of the

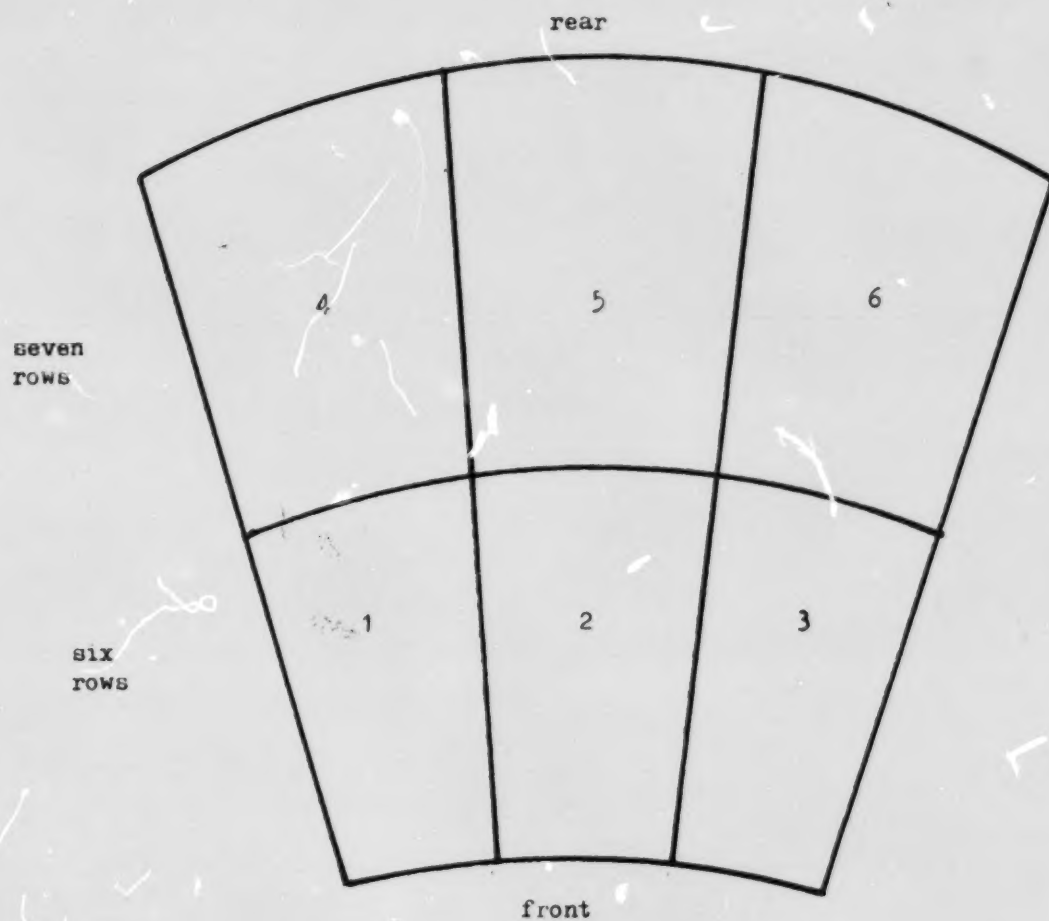


Figure 1. Aggregation of seats into six aisled sections.

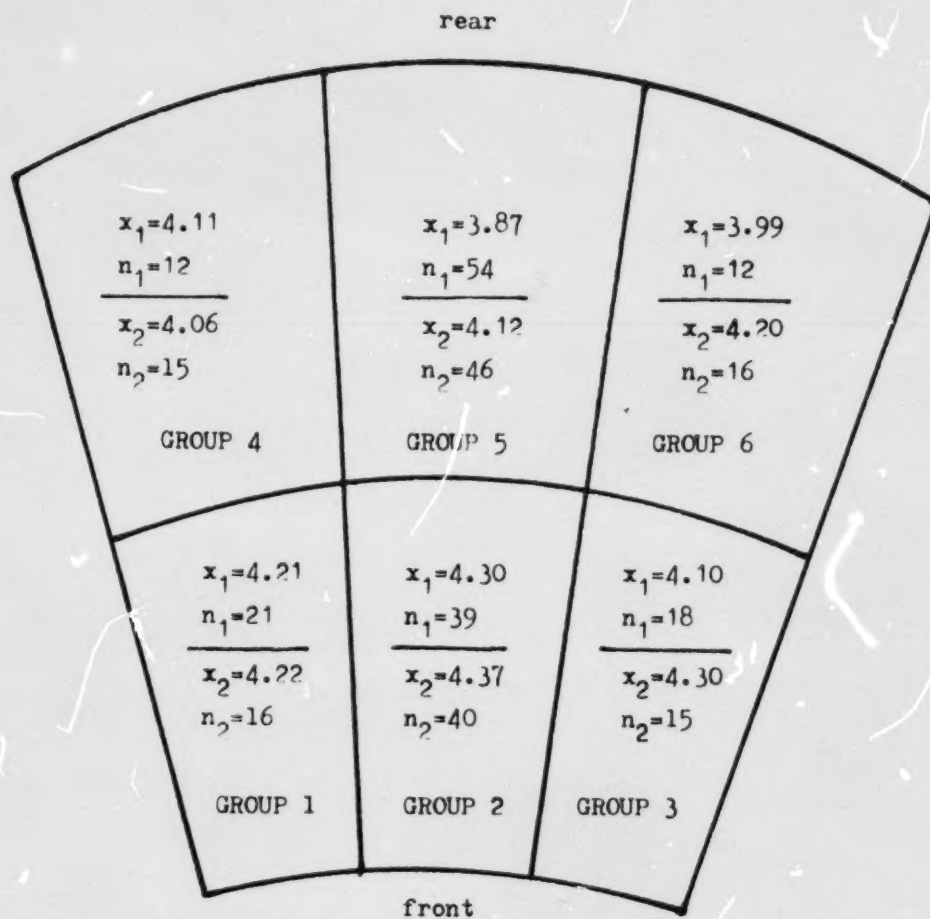


Figure 2. Mean evaluative ratings for each of six student groups. Scale values range from 1 (poor) to 5 (excellent). $\bar{x}_1$ and n_1 refer to Study 1; $\bar{x}_2$ and n_2 refer to Study 2.

Table 1

Source Table for Repeated Measures ANOVA: Study 1

Source	df	SS	MS	F
Between Groups	156	688.50	4.41	
Chunks (B)	5	53.41	10.68	2.54*
Error Between	151	635.09	4.21	
Within Groups	1570	1161.11	.74	
Rep. Measures (A)	10	185.79	18.58	29.63*
A x B	50	28.48	.57	.91
Error Within	1510	946.84	.63	

* $p < .05$.

Table 2

Source Table for Repeated Measures ANOVA: Study 2

Source	df	SS	MS	F
Between Groups	143	422.62	2.96	
Chunks (B)	5	19.38	3.88	1.33
Error Between	138	403.25	2.92	
Within Groups	1440	978.37	.68	
Rep. Measures (A)	10	163.61	16.36	28.96*
A x B	50	35.22	.70	1.25
Error Within	1380	779.54	.56	

* $p < .05$.

students into their seating groups. If chance classifications are made, the expected accuracy is 12.25%.* Subtracting expected from obtained percentages, an improvement of about 28% beyond chance assignment was shown by the discriminant function. Within groups, the best assignment occurred with group 5 (70.4%; refer to Figure 1). The worst prediction was obtained with groups 3 and 4, both showing no correct assignments.

In the third analysis, a stepwise multiple regression procedure was used to predict the continuous variable of row in class. The dependent measure, row, ranged from one to 13, with row one being closest to the front of the room, and row 13, farthest away. The eleven rating items were used as predictor variables. The purpose of this analysis was to determine whether a finer prediction could be made by using rows instead of six aggregate groupings.

Using the minimum standard error of estimate as a criterion for locating an optimum set of predictors, three rating items (in order, items 7, 10 and 3) developed a multiple correlation of .31 ($p < .01$). Applying a shrinkage formula (Kerlinger & Pedhazur, 1973, p. 283) produced a shrunken R of .28. Thus, the three best predictor variables explained about eight percent of the variation in seating patterns when the patterns are row aggregates. While significant, the small amount of criterion variance accounted for suggests that seat placement, or distance from the instructor, has a marginal impact on students' ratings of the instructor. Inspection of row means for each rating item shows that the first two rows gave systematically higher ratings. However, the remaining 11 rows fail to show a steady decline as rows move further from the front of the room.

* Expected classification rate is figured by taking the harmonic mean of the percent of total N within each of the six groupings.

Procedures and Results: Study 2

Study 1 was replicated the following semester, with only a single variation: students were asked to indicate, on the back of the rating form, whether they regularly sat in or near their current seat. It was thought that transient students might contribute less systematic patterns of ratings, and that so identified, they could be excluded from analyses. As it happened, few students indicated that they typically sat somewhere else; 90% claimed that it was their regular location.

In the repeated measures ANOVA (see Table 2), the between groups main effect was nonsignificant. In other words, the finding in Study 1 of rating differences among the six area groupings could not be replicated. As in Study 1, there was a nonsignificant interaction term and a significant within group effect across the 11 rating items.

The results of the stepwise discriminant function analysis likewise bore little similarity to the Study 1 outcomes. In predicting the six area groupings, two significant discriminant functions emerged (as compared to only one in Study 1). An examination of the largest standardized discriminant coefficients suggests that the first function encompasses a "motivation" dimension, while the second function seems to portray a "businesslike" dimension. By contrast, the single function found in Study 1 appeared to reflect overall teaching ability.

Classification of students into the six area groups showed 39.86% accuracy. Comparing this to the harmonic mean of chance assignment shows an improvement of 26.6% in classification, a figure similar to that found in Study 1. When the classifications for each of the six groupings are examined, the results do not closely resemble those of Study 1. Table 3 gives the main diagonal (percent hits) from both studies. Clearly, Study 1 predictions were not replicated in Study 2.

Table 3

Actual Group	N*	Predicted Group Membership					
		1	2	3	4	5	6
1	21(16)	23.8%(0.0%)*					
2	39(40)		48.7%(52.5%)				
3	18(15)			0.0%(33.3%)			
4	12(15)				0.0%(26.7%)		
5	54(46)					70.4%(52.2%)	
6	12(16)						8.3%(31.3%)

* The first figure refers to Study 1, while the figure in parentheses refers to Study 2.

9.

In the multiple regression for Study 2, the 11 evaluative items were again used as predictors of row. While three predictors formed an "optimum" set in Study 1, five predictors emerged in Study 2: items 4, 8, 7, 10, 2, in order of importance (see Appendix A for item stems). An R of .36, shrunken to .31, was found. Item 7--simulating interest--and item 10--accessible to students--were significant predictors in both studies. Inspection of row means for items 7 and 10 reveal a vague trend for ratings to be lower as distance from instructor increases. This finding is fairly simple to interpret. It seems reasonable to think that students who self-select seats far from the instructor are possibly less stimulated and believe the instructor to be less accessible for reasons of proximity alone. Nevertheless, this trend is by no means a strong one, and should be interpreted cautiously.

Conclusions

In most studies using statistical inference, it is desirable to have a sample size of sufficient size and generalizability to be able to draw conclusions about a larger population. From the present research, one might wonder whether any broad conclusions may be drawn, since the studies involved only large lectures, and used the same instructor in two successive semesters. The generalizability, or external validity, depends upon what population one wants to consider: the population of instructors in college, or the population of various size classes. Initially, the generalizability to both populations appears restricted. Surely there is little external validity for classes which are smaller, or even shaped differently.

But generalization to a population of instructors may follow a different argument. If rating bias occurs because of seating arrangement, then one would expect the same experienced instructor, teaching the same course in the same room for two consecutive semesters, to produce similar seating/rating trends for the two semesters. It is evident that, despite three statistical

views of the same data, almost no results were replicated from one study to the next. If control of instructor, course, class size, and room shape did not produce replicable results, it seems doubtful that a variety of instructors, courses, class sizes and room shapes would produce anything more systematic.

In summary, seating patterns appear to have a slight influence on student ratings of instructor effectiveness. But the influence is not easily replicable, and appears to be idiosyncratic to the composition of a particular class of students. This finding may serve to dampen a stereotype of many instructors: that students in the back of the room expect less, achieve less, and like the instructor less.

References

- Adams, R.S. & Biddle, P.J. Realities of teaching: Explorations with video tape. N.Y.: Holt, Rinehart & Winston, 1970.
- Gur, R.E., Gur, K.C., & Marshalek, B. Classroom seating and functional brain asymmetry. Journal of Educational Psychology, 1975, 67(1), 151-153.
- Kerlinger, F.N. & Pedhazur, E.J. Multiple regression in behavioral research. N.Y.: Holt, Rinehart & Winston, 1973.
- Lolli, A. A university-wide multivariate validation of a student rating scale for teacher evaluation. Unpublished Ph.D. thesis, University of Connecticut, 1977.
- Winer, B.J. Statistical principles in experimental design (2nd ed.) N.Y.: McGraw-Hill, 1971.

DIRECTIONS:

PLEASE USE A NO. 2 PENCIL TO FILL IN APPROPRIATE BLOCKS. DO NOT MAKE STRAY MARKS. DO NOT SIGN YOUR NAME. ERASE CLEANLY IF YOU CHANGE AN ANSWER. RESULTS WILL NOT BE SEEN BY THE INSTRUCTOR BEFORE THE COURSE IS COMPLETED.

1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9

Semester Standing	Is Course in Your Major	Expected Grade in This Course	Cumulative Average (OPR)	How Often Do You Attend Class
1 - 1 - 2	2 - 3 - 4		1 - LESS THAN 15	2 - 10 - 14
3 - 5 - 6	4 - 5 - 6		3 - 15 - 19	3 - 20 - 24
7 - 9 OR MORE	6 - GRADUATE	YES NO	4 - 25 - 29	4 - 25 - 29
		W F D C D F PASS AUDIT	5 - 30 - 34	5 - 30 - 34
			6 - 35 - 39	6 - 35 - 39
			7 - 40 - 44	7 - 40 - 44
			8 - 45 - 49	8 - 45 - 49
			9 - 50 - 54	9 - 50 - 54

Please omit those of the following items which are not appropriate:

In my opinion this instructor is excellent, good, average, less than average, poor with regard to:

LESS THAN POOR AVER. GOOD EXCEL.

- Overall teaching ability
- Presenting material in a clear and effective manner
- Demonstrating overall organization
- Making purpose and objectives in course clear
- Fulfilling course objectives
- Making work assignments and student responsibilities clear
- Stimulating interest
- Grading fairly and impartially
- Using examination items which stress important aspects of course
- Being accessible to students both in and out of class
- Showing an interest in and a concern for students

DIAGNOSTIC CHECK LIST: The following is for the purpose of providing specific feedback to your instructor. Please mark ONLY those traits in the positive instance of your instructor which you found to be PARTICULARLY NOTABLE.

THE INSTRUCTOR

is consistently late in starting or ending class

is consistently unprepared

has illegible handwriting

has a distracting smoking habit

seems unfriendly toward students

is friendly toward students

is fair to everyone

criticizes and embarrasses students unfairly

encourages student questions or comments

is patronizing, "talks down" to students

maintains attitude of "I am always right"

enforces pointless rules

seems preoccupied with personal problems

is too dogmatic or opinionated to present materials fairly

displays favoritism toward certain students

displays prejudice on the basis of race, sex, religion, ethnicity

speaks clearly and effectively

speaks in a monotone

is difficult to hear or understand (mumbles, accent, inaudible)

has distracting speech habits

has distracting mannerisms (nervousness, pacing, twitch, etc.)

engage in too much idle chit chat
uses class time effectively
just reads lectures

presents interesting lectures; stimulating
stimulates curiosity
displays enthusiasm
presents skill, moving lectures

does not cover materials in depth, too superficial

summarizes material effectively
relates course to real life situation
shows sense of humor

provides too much detail or trivia
enough of materials is logical

stresses important points
does not stress important points

presents material at too fast a pace
presents material at too slow a pace

goes over the same thing too often
uses examples, illustrations well

does not use enough illustrations, examples

uses special materials or labs that were useful

discusses materials effectively

spends too little time on class discussions

responds to questions in a vague and confusing manner

answers questions completely

relates readings and lectures clearly

assigns readings materials and then ignores them

readings and assignments are meaningful

does not explain what is expected on exams or assignments

does not provide enough feedback or comments on exams or papers

provides helpful feedback

is slow in returning graded work

stresses rote memorization or trivia rather than understanding on exams

applies grading standards inconsistently

does not provide enough exams or other materials for evaluation

requires purchase of costly materials which are not worth the price

assigns too much "busy work"

makes unreasonably long and burdensome assignments

increases appreciation of subject matter

THIS COURSE

is better than expected

too much smoking takes place

cheating is widespread

enrollments are too large for effective instruction

content is not sufficiently challenging

content is over my head, too difficult

content does not match expectations, catalog description

too much responsibility is delegated to graduate assistant